



Roll No:

BTECH

(SEM. VIII) THEORY EXAMINATION 2025-26

ELECTRIC VEHICLES

TIME: 3 HRS

M.MARKS: 70

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief.

2x7 = 14

(a)	What is electrified transportation?	CO-1	K2
(b)	What is a BLDC motor?	CO-2	K2
(c)	What is a Battery Management System (BMS)?	CO-3	K2
(d)	What is cell balancing in Li-ion batteries?	CO-3	K2
(e)	List basic components of an electric vehicle.	CO-1	K2
(f)	What is AC charging?	CO-4	K2
(g)	What is V2G (Vehicle-to-Grid)?	CO-5	K2

SECTION B

2. Attempt any *three* of the following:

7 x 3 = 21

(a)	Explain the concept and evolution of electric vehicles.	CO-1	K2
(b)	Describe the working of axial flux motors.	CO-2	K2
(c)	Explain different types of EV batteries with comparison.	CO-3	K2
(d)	Discuss standards such as IEC 61850, 61851, and IEC 62196.	CO-4	K2
(e)	Explain the concept and applications of V2G technology.	CO-5	K2

SECTION C

3. Attempt any *one* part of the following:

7 x 1 = 7

(a)	Compare electric vehicles with IC engine vehicles.	CO-1	K3
(b)	Explain autonomy and vehicle computing needs in EVs.	CO-1	K2

4. Attempt any *one* part of the following:

7 x 1 = 7

(a)	Discuss speed control methods of DC motors and BLDC motors.	CO-2	K2
(b)	Explain different types of motors used in EVs.	CO-2	K2

5. Attempt any *one* part of the following:

7 x 1 = 7

(a)	Explain Li-ion battery characteristics and selection criteria.	CO-3	K2
(b)	Explain battery degradation, life cycle, and efficiency trends.	CO-3	K2

6. Attempt any *one* part of the following:

7 x 1 = 7

(a)	Compare AC and DC charging methods.	CO-4	K2
(b)	Describe on-board and off-board chargers.	CO-4	K2

7. Attempt any *one* part of the following:

7 x 1 = 7

(a)	Explain EV charging demand estimation and its challenges.	CO-5	K2
(b)	Explain integration of energy storage in EV charging systems.	CO-5	K2